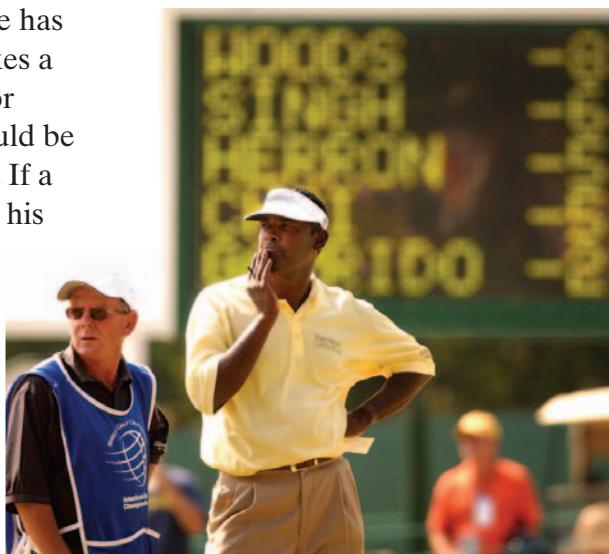


## Did You Know?

In golf, scores can be negative. Each golf hole has a value called par. Par is the number of strokes a golfer usually needs to complete the hole. For example, a good golfer, like Vijay Singh, should be able to complete a par 4 hole in four strokes. If a golfer completes the hole in six strokes, then his or her score for that hole is “two over par” (+2). If a golfer completes the hole in two strokes, his or her score is “two under par” (−2). A player’s score for a round of golf is the total of the number of strokes above or under par.



For: Information about golf  
Web Code: ane-9031



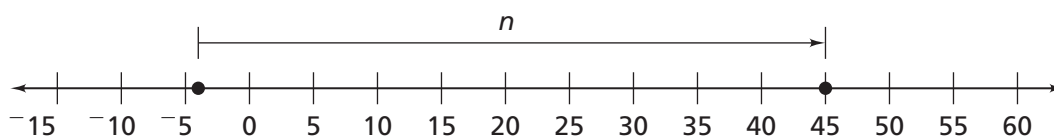
## 1.3 What's the Change?

**T**he National Weather Service keeps records of temperature changes.

The world record for fastest rise in outside air temperature occurred in Spearfish, South Dakota, on January 22, 1943.

The temperature rose from  $-4^{\circ}\text{F}$  to  $45^{\circ}\text{F}$  in two minutes.

What was the change in temperature over that two minutes? How could you show this change,  $n$ , on the number line?

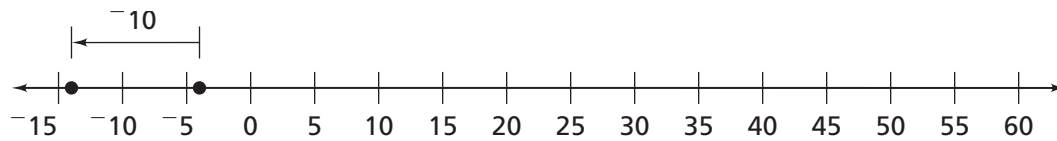


From  $-4^{\circ}\text{F}$  to  $0^{\circ}\text{F}$  is a change of  $+4^{\circ}\text{F}$ , and from  $0^{\circ}\text{F}$  to  $45^{\circ}\text{F}$  is a change of  $+45^{\circ}\text{F}$ . So the total change is  $+49^{\circ}\text{F}$ . The following number sentences show this.

$$\begin{aligned} -4 + n &= +45 \\ -4 + +49 &= +45 \end{aligned}$$

The sign of the change in temperature shows the direction of the change. In this case,  $+49$  means the temperature increased  $49^{\circ}\text{F}$ .

If the temperature had instead dropped  $10^\circ$  from  $-4^\circ\text{F}$ , you would write the change as  $-10^\circ\text{F}$ .



$$-4 + -10 = n$$

$$-4 + -10 = -14$$

### Problem 1.3 Using a Number Line Model

Sketch number lines and write number sentences for each question.

- A.** A person goes from a sauna at  $120^\circ\text{F}$  to an outside temperature of  $-20^\circ\text{F}$ . What is the change in temperature?
- B.** The temperature reading on a thermometer is  $25^\circ\text{F}$ . In the problems below, a positive number means the temperature is rising. A negative number means the temperature is falling. What is the new reading for each temperature change below?
1.  $+10^\circ\text{F}$
  2.  $-2^\circ\text{F}$
  3.  $-30^\circ\text{F}$
- C.** The temperature reading on a thermometer is  $-15^\circ\text{F}$ . What is the new reading for each temperature change?
1.  $+3^\circ\text{F}$
  2.  $-10^\circ\text{F}$
  3.  $+40^\circ\text{F}$
- D.** What is the change in temperature when the thermometer reading moves from the first temperature to the second temperature? Write an equation for each part.
1.  $20^\circ\text{F}$  to  $-10^\circ\text{F}$
  2.  $-20^\circ\text{F}$  to  $-10^\circ\text{F}$
  3.  $-20^\circ\text{F}$  to  $10^\circ\text{F}$
  4.  $-10^\circ\text{F}$  to  $-20^\circ\text{F}$
  5.  $20^\circ\text{F}$  to  $10^\circ\text{F}$
  6.  $10^\circ\text{F}$  to  $20^\circ\text{F}$
- E.** The temperature was  $-5^\circ\text{F}$  when Sally went to school on Monday. The temperature rose  $20^\circ\text{F}$  during the day, but fell  $25^\circ\text{F}$  during the night. A heat wave the next day increased the temperature  $40^\circ\text{F}$ . But an arctic wind overnight decreased the temperature  $70^\circ\text{F}$ ! What was the temperature after the  $70^\circ$  decrease?

**ACE** Homework starts on page 16.